SEQUENCE LISTING

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<210> 1
<211> 501
<212> PRT
<213> Homo sapiens

<400> 1

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Met Gln Ala Arg Tyr Ser Val Ser Asp Pro Asn Ala Leu Gly Val Val
 1               5                  10                  15
Pro Tyr Leu Ser Glu Gln Asn Tyr Tyr Arg Ala Ala Gly Ser Tyr Gly
            20                  25                  30
Gly Met Ala Ser Pro Met Gly Val Tyr Ser Gly His Pro Glu Gln Tyr
        35                  40                  45
Ser Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His His Gln Pro
    50                  55                  60
Ala Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu
65                  70                  75                  80
Ile Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys Ile Thr Leu Asn
                85                  90                  95
Gly Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn
            100                 105                 110
Lys Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu
        115                 120                 125
Cys Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser
    130                 135                 140
Tyr Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser
145                 150                 155                 160
Phe Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu
                165                 170                 175
Lys Glu Glu Arg Ala His Leu Lys Glu Pro Pro Pro Ala Ala Ser Lys
            180                 185                 190
Gly Ala Pro Ala Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu
```

```
        195                 200                 205
Lys Lys Val Val Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val
    210                 215                 220
Ile Thr Lys Val Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser
225                 230                 235                 240
Pro Arg Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu
                245                 250                 255
Pro Glu His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val
            260                 265                 270
Glu Asn Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Glu Leu Ser
        275                 280                 285
Pro Gly Ala Gly Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro
    290                 295                 300
Tyr Ala Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly
305                 310                 315                 320
Leu Glu Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser Met Arg Ala Met
                325                 330                 335
Ser Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Met Cys Val Pro Pro
            340                 345                 350
Ala Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Thr Ser Pro
        355                 360                 365
Leu Ser Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Ala Ala
    370                 375                 380
Thr Gly His His His Gln His His Gly His His His Pro Gln Ala Pro
385                 390                 395                 400
Pro Pro Pro Pro Ala Pro Gln Pro Gln Pro Thr Pro Gln Pro Gly Ala
                405                 410                 415
Ala Ala Ala Gln Ala Ala Ser Trp Tyr Leu Asn His Ser Gly Asp Leu
            420                 425                 430
Asn His Leu Pro Gly His Thr Phe Ala Ala Gln Gln Gln Thr Phe Pro
        435                 440                 445
Asn Val Arg Glu Met Phe Asn Ser His Arg Leu Gly Ile Glu Asn Ser
    450                 455                 460
Thr Leu Gly Glu Ser Gln Val Ser Gly Asn Ala Ser Cys Gln Leu Pro
465                 470                 475                 480
Tyr Arg Ser Thr Pro Pro Leu Tyr Arg His Ala Ala Pro Tyr Ser Tyr
                485                 490                 495
Asp Cys Thr Lys Tyr
            500
```

<210> 2
<211> 514
<212> PRT
<213> Homo sapiens

<400> 2

```
Pro Ser Glu Lys Asn Glu Phe Ser Arg Arg Lys Arg Ser Lys Ser Glu
 1               5                  10                  15
Asp Met Asp Asn Val Gln Ser Lys Arg Arg Arg Tyr Met Glu Glu Glu
            20                  25                  30
Tyr Glu Ala Glu Phe Gln Val Lys Ile Thr Ala Lys Gly Asp Ile Asn
        35                  40                  45
Gln Lys Leu Gln Lys Val Ile Gln Trp Leu Leu Glu Glu Lys Leu Cys
    50                  55                  60
Ala Leu Gln Cys Ala Val Phe Asp Lys Thr Leu Ala Glu Leu Lys Thr
65                  70                  75                  80
Arg Val Glu Lys Ile Glu Cys Asn Lys Arg His Lys Thr Val Leu Thr
```

```
                85                  90                  95
Glu Leu Gln Ala Lys Ile Ala Arg Leu Thr Lys Arg Phe Glu Ala Ala
            100                 105                 110
Lys Glu Asp Leu Lys Lys Arg His Glu His Pro Pro Asn Pro Pro Val
        115                 120                 125
Ser Pro Gly Lys Thr Val Asn Asp Val Asn Ser Asn Asn Asn Met Ser
    130                 135                 140
Tyr Arg Asn Ala Gly Thr Val Arg Gln Met Leu Glu Ser Lys Arg Asn
145                 150                 155                 160
Val Ser Glu Ser Ala Pro Pro Ser Phe Gln Thr Pro Val Asn Thr Val
                165                 170                 175
Ser Ser Thr Asn Leu Val Thr Pro Pro Ala Val Val Ser Ser Gln Pro
            180                 185                 190
Lys Leu Gln Thr Pro Val Thr Ser Gly Ser Leu Thr Ala Thr Ser Val
        195                 200                 205
Leu Pro Ala Pro Asn Thr Ala Thr Val Val Ala Thr Thr Gln Val Pro
    210                 215                 220
Ser Gly Asn Pro Gln Pro Thr Ile Ser Leu Gln Pro Leu Pro Val Ile
225                 230                 235                 240
Leu His Val Pro Val Ala Val Ser Ser Gln Pro Gln Leu Leu Gln Ser
                245                 250                 255
His Pro Gly Thr Leu Val Thr Asn Gln Pro Ser Gly Asn Val Glu Phe
            260                 265                 270
Ile Ser Val Gln Ser Pro Pro Thr Val Ser Gly Leu Thr Lys Asn Pro
        275                 280                 285
Val Ser Leu Pro Ser Leu Pro Asn Pro Thr Lys Pro Asn Asn Val Pro
    290                 295                 300
Ser Val Pro Ser Pro Ser Ile Gln Arg Asn Pro Thr Ala Ser Ala Ala
305                 310                 315                 320
Pro Leu Gly Thr Thr Leu Ala Val Gln Ala Val Pro Thr Ala His Ser
                325                 330                 335
Ile Val Gln Ala Thr Arg Thr Ser Leu Pro Thr Val Gly Pro Ser Gly
            340                 345                 350
Leu Tyr Ser Pro Ser Thr Asn Arg Gly Pro Ile Gln Met Lys Ile Pro
        355                 360                 365
Ile Ser Ala Phe Ser Thr Ser Ser Ala Ala Glu Gln Asn Ser Asn Thr
    370                 375                 380
Thr Pro Arg Ile Glu Asn Gln Thr Asn Lys Thr Ile Asp Ala Ser Val
385                 390                 395                 400
Ser Lys Lys Ala Ala Asp Ser Thr Ser Gln Cys Gly Lys Ala Thr Gly
                405                 410                 415
Ser Asp Ser Ser Gly Val Ile Asp Leu Thr Met Asp Asp Glu Glu Ser
            420                 425                 430
Gly Ala Ser Gln Asp Pro Lys Lys Leu Asn His Thr Pro Val Ser Thr
        435                 440                 445
Met Ser Ser Ser Gln Pro Val Ser Arg Pro Leu Gln Pro Ile Gln Pro
    450                 455                 460
Ala Pro Pro Leu Gln Pro Ser Gly Val Pro Thr Ser Gly Pro Ser Gln
465                 470                 475                 480
Thr Thr Ile His Leu Leu Pro Thr Ala Pro Thr Thr Val Asn Val Thr
                485                 490                 495
His Arg Pro Val Thr Gln Val Thr Thr Arg Leu Pro Val Pro Arg Ala
            500                 505                 510
Pro Ala
```

<210> 3

<211> 524
<212> PRT
<213> Homo sapiens

<400> 3

```
Met His Val Glu Thr Gly Pro Asn Gly Glu Gln Ile Arg Lys His Ala
 1               5                  10                  15
Gly Gln Lys Arg Thr Tyr Lys Ala Ile Ser Glu Ser Tyr Ala Phe Leu
            20                  25                  30
Pro Arg Glu Ala Val Thr Arg Phe Leu Met Ser Cys Ser Glu Cys Gln
        35                  40                  45
Lys Arg Met His Leu Asn Pro Asp Gly Thr Asp His Lys Asp Asn Gly
    50                  55                  60
Lys Pro Pro Thr Leu Val Thr Ser Met Ile Asp Tyr Asn Met Pro Ile
65                  70                  75                  80
Thr Met Ala Tyr Met Lys His Met Lys Leu Gln Leu Leu Asn Ser Gln
                85                  90                  95
Gln Asp Glu Asp Glu Ser Ser Ile Glu Ser Asp Glu Phe Asp Met Ser
            100                 105                 110
Asp Ser Thr Arg Met Ser Ala Val Asn Ser Asp Leu Ser Ser Asn Leu
        115                 120                 125
Glu Glu Arg Met Gln Ser Pro Gln Asn Leu His Gly Gln Gln Asp Asp
    130                 135                 140
Asp Ser Ala Ala Glu Ser Phe Asn Gly Asn Glu Thr Leu Gly His Ser
145                 150                 155                 160
Ser Ile Ala Ser Gly Gly Thr His Ser Arg Glu Met Gly Asp Ser Asn
                165                 170                 175
Ser Asp Gly Lys Thr Gly Leu Glu Gln Asp Glu Gln Pro Leu Asn Leu
            180                 185                 190
Ser Asp Ser Pro Leu Ser Ala Gln Leu Thr Ser Glu Tyr Arg Ile Asp
        195                 200                 205
Asp His Asn Ser Asn Gly Lys Asn Lys Tyr Lys Asn Leu Leu Ile Ser
    210                 215                 220
Asp Leu Lys Met Glu Arg Glu Ala Arg Glu Asn Gly Ser Lys Ser Pro
225                 230                 235                 240
Ala His Ser Tyr Ser Ser Tyr Asp Ser Gly Lys Asn Glu Ser Val Asp
                245                 250                 255
Arg Gly Ala Glu Asp Leu Ser Leu Asn Arg Gly Asp Glu Asp Glu Asp
            260                 265                 270
Asp His Glu Asp His Asp Asp Ser Glu Lys Val Asn Glu Thr Asp Gly
        275                 280                 285
Val Glu Ala Glu Arg Leu Lys Ala Phe Asn Met Phe Val Arg Leu Phe
    290                 295                 300
Val Asp Glu Asn Leu Asp Arg Met Val Pro Ile Ser Lys Gln Pro Lys
305                 310                 315                 320
Glu Lys Ile Gln Ala Ile Ile Asp Ser Cys Arg Arg Gln Phe Pro Glu
                325                 330                 335
Tyr Gln Glu Arg Ala Arg Lys Arg Ile Arg Thr Tyr Leu Lys Ser Cys
            340                 345                 350
Arg Arg Met Lys Arg Ser Gly Phe Glu Met Ser Arg Pro Ile Pro Ser
        355                 360                 365
His Leu Thr Ser Ala Val Ala Glu Ser Ile Leu Ala Ser Ala Cys Glu
    370                 375                 380
Ser Glu Ser Arg Asn Ala Ala Lys Arg Met Arg Leu Glu Arg Gln Gln
385                 390                 395                 400
Asp Glu Ser Ala Pro Ala Asp Lys Gln Cys Lys Pro Glu Ala Thr Gln
                405                 410                 415
```

```
Ala Thr Tyr Ser Thr Ser Ala Val Pro Gly Ser Gln Asp Val Leu Tyr
            420                 425                 430
Ile Asn Gly Asn Gly Thr Tyr Ser Tyr His Ser Tyr Arg Gly Leu Gly
        435                 440                 445
Gly Gly Leu Leu Asn Leu Asn Asp Ala Ser Ser Ser Gly Pro Thr Asp
    450                 455                 460
Leu Ser Met Lys Arg Gln Leu Ala Thr Ser Ser Gly Ser Ser Ser Ser
465                 470                 475                 480
Ser Asn Ser Arg Pro Gln Leu Ser Pro Thr Glu Ile Asn Ala Val Arg
                485                 490                 495
Gln Leu Val Ala Gly Tyr Arg Glu Ser Ala Ala Phe Leu Leu Arg Ser
            500                 505                 510
Ala Asp Glu Leu Glu Asn Leu Ile Leu Gln Gln Asn
        515                 520
```

<210> 4
<211> 586
<212> PRT
<213> Homo sapiens

<400> 4

```
Met Asn Pro Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg
 1               5                  10                  15
Arg Phe Asp Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe
            20                  25                  30
Met Val Val Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys
        35                  40                  45
Gly Glu Thr Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu
    50                  55                  60
Thr Lys Met Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr
65                  70                  75                  80
Asn Ala Val Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln
                85                  90                  95
Ala Thr Lys Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile
            100                 105                 110
Ile Asn Glu Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys
        115                 120                 125
Val Gly Ala Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr
    130                 135                 140
Phe Asp Val Ser Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys
145                 150                 155                 160
Ser Thr Ala Gly Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg
                165                 170                 175
Met Val Asn His Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp
            180                 185                 190
Ile Ser Glu Asn Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu
        195                 200                 205
Arg Ala Lys Arg Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile
    210                 215                 220
Asp Ser Leu Tyr Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala
225                 230                 235                 240
Arg Phe Glu Glu Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro
                245                 250                 255
Val Glu Lys Ala Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His
            260                 265                 270
Asp Ile Val Leu Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys
        275                 280                 285
```

```
Leu Leu Gln Asp Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn
    290                 295                 300
Pro Asp Glu Ala Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu
305                 310                 315                 320
Ser Gly Asp Lys Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val
                325                 330                 335
Thr Pro Leu Ser Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val
            340                 345                 350
Leu Ile Lys Arg Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe
        355                 360                 365
Thr Thr Tyr Ser Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu
    370                 375                 380
Gly Glu Arg Ala Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu
385                 390                 395                 400
Leu Thr Gly Ile Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val
                405                 410                 415
Thr Phe Asp Ile Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp
            420                 425                 430
Lys Ser Thr Gly Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly
        435                 440                 445
Arg Leu Ser Lys Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys
    450                 455                 460
Tyr Lys Ala Glu Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn
465                 470                 475                 480
Ser Leu Glu Ser Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu
                485                 490                 495
Lys Leu Gln Gly Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp
            500                 505                 510
Lys Cys Asn Glu Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu
        515                 520                 525
Lys Glu Glu Phe Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn
    530                 535                 540
Pro Ile Ile Thr Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly
545                 550                 555                 560
Met Pro Gly Gly Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala
                565                 570                 575
Ser Ser Gly Pro Thr Ile Glu Glu Val Asp
            580                 585
```

<210> 5
<211> 449
<212> PRT
<213> Homo sapiens

<400> 5

```
Met Met Leu Ser Thr Glu Gly Arg Glu Gly Phe Val Val Lys Val Arg
 1               5                  10                  15
Gly Leu Pro Trp Ser Cys Ser Ala Asp Glu Val Met Arg Phe Phe Ser
            20                  25                  30
Asp Cys Lys Ile Gln Asn Gly Thr Ser Gly Ile Arg Phe Ile Tyr Thr
        35                  40                  45
Arg Glu Gly Arg Pro Ser Gly Glu Ala Phe Val Glu Leu Glu Ser Glu
    50                  55                  60
Glu Glu Val Lys Leu Ala Leu Lys Lys Asp Arg Glu Thr Met Gly His
65                  70                  75                  80
Arg Tyr Val Glu Val Phe Lys Ser Asn Ser Val Glu Met Asp Trp Val
                85                  90                  95
```

```
Leu Lys His Thr Gly Pro Asn Ser Pro Asp Thr Ala Asn Asp Gly Phe
            100                 105                 110
Val Arg Leu Arg Gly Leu Pro Phe Gly Cys Ser Lys Glu Glu Ile Val
        115                 120                 125
Gln Phe Phe Ser Gly Leu Glu Ile Val Pro Asn Gly Met Thr Leu Pro
    130                 135                 140
Val Asp Phe Gln Gly Arg Ser Thr Gly Glu Ala Phe Val Gln Phe Ala
145                 150                 155                 160
Ser Gln Glu Ile Ala Glu Lys Ala Leu Lys Lys His Lys Glu Arg Ile
                165                 170                 175
Gly His Arg Tyr Ile Glu Ile Phe Lys Ser Ser Arg Ala Glu Val Arg
            180                 185                 190
Thr His Tyr Asp Pro Pro Arg Lys Leu Met Ala Met Gln Arg Pro Gly
        195                 200                 205
Pro Tyr Asp Arg Pro Gly Ala Gly Arg Gly Tyr Asn Ser Ile Gly Arg
    210                 215                 220
Gly Ala Gly Phe Glu Arg Met Arg Arg Gly Ala Tyr Gly Gly Gly Tyr
225                 230                 235                 240
Gly Gly Tyr Asp Asp Tyr Gly Gly Tyr Asn Asp Gly Tyr Gly Phe Gly
                245                 250                 255
Ser Asp Arg Phe Gly Arg Asp Leu Asn Tyr Cys Phe Ser Gly Met Ser
            260                 265                 270
Asp His Arg Tyr Gly Asp Gly Gly Ser Ser Phe Gln Ser Thr Thr Gly
        275                 280                 285
His Cys Val His Met Arg Gly Leu Pro Tyr Arg Ala Thr Glu Asn Asp
    290                 295                 300
Ile Tyr Asn Phe Phe Ser Pro Leu Asn Pro Met Arg Val His Ile Glu
305                 310                 315                 320
Ile Gly Pro Asp Gly Arg Val Thr Gly Glu Ala Asp Val Glu Phe Ala
                325                 330                 335
Thr His Glu Asp Ala Val Ala Ala Met Ala Lys Asp Lys Ala Asn Met
            340                 345                 350
Gln His Arg Tyr Val Glu Leu Phe Leu Asn Ser Thr Ala Gly Thr Ser
        355                 360                 365
Gly Gly Ala Tyr Asp His Ser Tyr Val Glu Leu Phe Leu Asn Ser Thr
    370                 375                 380
Ala Gly Ala Ser Gly Gly Ala Tyr Gly Ser Gln Met Met Gly Gly Met
385                 390                 395                 400
Gly Leu Ser Asn Gln Ser Ser Tyr Gly Gly Pro Ala Ser Gln Gln Leu
                405                 410                 415
Ser Gly Gly Tyr Gly Gly Gly Tyr Gly Gly Gln Ser Ser Met Ser Gly
            420                 425                 430
Tyr Asp Gln Val Leu Gln Glu Asn Ser Ser Asp Tyr Gln Ser Asn Leu
        435                 440                 445
Ala
```

<210> 6
<211> 1675
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Ala Gln Ile Leu Pro Ile Arg Phe Gln Glu His Leu Gln Leu Gln
 1               5                  10                  15
Asn Leu Gly Ile Asn Pro Ala Asn Ile Gly Phe Ser Thr Leu Thr Met
            20                  25                  30
```

```
Glu Ser Asp Lys Phe Ile Cys Ile Arg Glu Lys Val Gly Glu Gln Ala
        35                  40                  45
Gln Val Val Ile Ile Asp Met Asn Asp Pro Ser Asn Pro Ile Arg Arg
    50                  55                  60
Pro Ile Ser Ala Asp Ser Ala Ile Met Asn Pro Ala Ser Lys Val Ile
65                  70                  75                  80
Ala Leu Lys Ala Gly Lys Thr Leu Gln Ile Phe Asn Ile Glu Met Lys
                85                  90                  95
Ser Lys Met Lys Ala His Thr Met Thr Asp Asp Val Thr Phe Trp Lys
            100                 105                 110
Trp Ile Ser Leu Asn Thr Val Ala Leu Val Thr Asp Asn Ala Val Tyr
        115                 120                 125
His Trp Ser Met Glu Gly Glu Ser Gln Pro Val Lys Met Phe Asp Arg
    130                 135                 140
His Ser Ser Leu Ala Gly Cys Gln Ile Ile Asn Tyr Arg Thr Asp Ala
145                 150                 155                 160
Lys Gln Lys Trp Leu Leu Leu Thr Gly Ile Ser Ala Gln Gln Asn Arg
                165                 170                 175
Val Val Gly Ala Met Gln Leu Tyr Ser Val Asp Arg Lys Val Ser Gln
            180                 185                 190
Pro Ile Glu Gly His Ala Ala Ser Phe Ala Gln Phe Lys Met Glu Gly
        195                 200                 205
Asn Ala Glu Glu Ser Thr Leu Phe Cys Phe Ala Val Arg Gly Gln Ala
    210                 215                 220
Gly Gly Lys Leu His Ile Ile Glu Val Gly Thr Pro Pro Thr Gly Asn
225                 230                 235                 240
Gln Pro Phe Pro Lys Lys Ala Val Asp Val Phe Phe Pro Pro Glu Ala
                245                 250                 255
Gln Asn Asp Phe Pro Val Ala Met Gln Ile Ser Glu Lys His Asp Val
            260                 265                 270
Val Phe Leu Ile Thr Lys Tyr Gly Tyr Ile His Leu Tyr Asp Leu Glu
        275                 280                 285
Thr Gly Thr Cys Ile Tyr Met Asn Arg Ile Ser Gly Glu Thr Ile Phe
    290                 295                 300
Val Thr Ala Pro His Glu Ala Thr Ala Gly Ile Ile Gly Val Asn Arg
305                 310                 315                 320
Lys Gly Gln Val Leu Ser Val Cys Val Glu Glu Glu Asn Ile Ile Pro
                325                 330                 335
Tyr Ile Thr Asn Val Leu Gln Asn Pro Asp Leu Ala Leu Arg Met Ala
            340                 345                 350
Val Arg Asn Asn Leu Ala Gly Ala Glu Glu Leu Phe Ala Arg Lys Phe
        355                 360                 365
Asn Ala Leu Phe Ala Gln Gly Asn Tyr Ser Glu Ala Ala Lys Val Ala
    370                 375                 380
Ala Asn Ala Pro Lys Gly Ile Leu Arg Thr Pro Asp Thr Ile Arg Arg
385                 390                 395                 400
Phe Gln Ser Val Pro Ala Gln Pro Gly Gln Thr Ser Pro Leu Leu Gln
                405                 410                 415
Tyr Phe Gly Ile Leu Leu Asp Gln Gly Gln Leu Asn Lys Tyr Glu Ser
            420                 425                 430
Leu Glu Leu Cys Arg Pro Val Leu Gln Gln Gly Arg Lys Gln Leu Leu
        435                 440                 445
Glu Lys Trp Leu Lys Glu Asp Lys Leu Glu Cys Ser Glu Glu Leu Gly
    450                 455                 460
Asp Leu Val Lys Ser Val Asp Pro Thr Leu Ala Leu Ser Val Tyr Leu
465                 470                 475                 480
Arg Ala Asn Val Pro Asn Lys Val Ile Gln Cys Phe Ala Glu Thr Gly
```

```
                485                 490                 495
Gln Val Gln Lys Ile Val Leu Tyr Ala Lys Lys Val Gly Tyr Thr Pro
            500                 505                 510
Asp Trp Ile Phe Leu Leu Arg Asn Val Met Arg Ile Ser Pro Asp Gln
        515                 520                 525
Gly Gln Gln Phe Ala Gln Met Leu Val Gln Asp Glu Glu Pro Leu Ala
    530                 535                 540
Asp Ile Thr Gln Ile Val Asp Val Phe Met Glu Tyr Asn Leu Ile Gln
545                 550                 555                 560
Gln Cys Thr Ala Phe Leu Leu Asp Ala Leu Lys Asn Asn Arg Pro Ser
                565                 570                 575
Glu Gly Pro Leu Gln Thr Arg Leu Leu Glu Met Asn Leu Met His Ala
            580                 585                 590
Pro Gln Val Ala Asp Ala Ile Leu Gly Asn Gln Met Phe Thr His Tyr
        595                 600                 605
Asp Arg Ala His Ile Ala Gln Leu Cys Glu Lys Ala Gly Leu Leu Gln
    610                 615                 620
Arg Ala Leu Glu His Phe Thr Asp Leu Tyr Asp Ile Lys Arg Ala Val
625                 630                 635                 640
Val His Thr His Leu Leu Asn Pro Glu Trp Leu Val Asn Tyr Phe Gly
                645                 650                 655
Ser Leu Ser Val Glu Asp Ser Leu Glu Cys Leu Arg Ala Met Leu Ser
            660                 665                 670
Ala Asn Ile Arg Gln Asn Leu Gln Ile Cys Val Gln Val Ala Ser Lys
        675                 680                 685
Tyr His Glu Gln Leu Ser Thr Gln Ser Leu Ile Glu Leu Phe Glu Ser
    690                 695                 700
Phe Lys Ser Phe Glu Gly Leu Phe Tyr Phe Leu Gly Ser Ile Val Asn
705                 710                 715                 720
Phe Ser Gln Asp Pro Asp Val His Phe Lys Tyr Ile Gln Ala Ala Cys
                725                 730                 735
Lys Thr Gly Gln Ile Lys Glu Val Glu Arg Ile Cys Arg Glu Ser Asn
            740                 745                 750
Cys Tyr Asp Pro Glu Arg Val Lys Asn Phe Leu Lys Glu Ala Lys Leu
        755                 760                 765
Thr Asp Gln Leu Pro Leu Ile Ile Val Cys Asp Arg Phe Asp Phe Val
    770                 775                 780
His Asp Leu Val Leu Tyr Leu Tyr Arg Asn Asn Leu Gln Lys Tyr Ile
785                 790                 795                 800
Glu Ile Tyr Val Gln Lys Val Asn Pro Ser Arg Leu Pro Val Val Ile
                805                 810                 815
Gly Gly Leu Leu Asp Val Asp Cys Ser Glu Asp Val Ile Lys Asn Leu
            820                 825                 830
Ile Leu Val Val Arg Gly Gln Phe Ser Thr Asp Glu Leu Val Ala Glu
        835                 840                 845
Val Glu Lys Arg Asn Arg Leu Lys Leu Leu Leu Pro Trp Leu Glu Ala
    850                 855                 860
Arg Ile His Glu Gly Cys Glu Glu Pro Ala Thr His Asn Ala Leu Ala
865                 870                 875                 880
Lys Ile Tyr Ile Asp Ser Asn Asn Asn Pro Glu Arg Phe Leu Arg Glu
                885                 890                 895
Asn Pro Tyr Tyr Asp Ser Arg Val Val Gly Lys Tyr Cys Glu Lys Arg
            900                 905                 910
Asp Pro His Leu Ala Cys Val Ala Tyr Glu Arg Gly Gln Cys Asp Leu
        915                 920                 925
Glu Leu Ile Asn Val Cys Asn Glu Asn Ser Leu Phe Lys Ser Leu Ser
    930                 935                 940
```

```
Arg Tyr Leu Val Arg Arg Lys Asp Pro Glu Leu Trp Gly Ser Val Leu
945                 950                 955                 960
Leu Glu Ser Asn Pro Tyr Arg Arg Pro Leu Ile Asp Gln Val Val Gln
                965                 970                 975
Thr Ala Leu Ser Glu Thr Gln Asp Pro Glu Glu Val Ser Val Thr Val
            980                 985                 990
Lys Ala Phe Met Thr Ala Asp Leu Pro Asn Glu Leu Ile Glu Leu Leu
        995                 1000                1005
Glu Lys Ile Val Leu Asp Asn Ser Val Phe Ser Glu His Arg Asn Leu
    1010                1015                1020
Gln Asn Leu Leu Ile Leu Thr Ala Ile Lys Ala Asp Arg Thr Arg Val
1025                1030                1035                1040
Met Glu Tyr Ile Asn Arg Leu Asp Asn Tyr Asp Ala Pro Asp Ile Ala
                1045                1050                1055
Asn Ile Ala Ile Ser Asn Glu Leu Phe Glu Glu Ala Phe Ala Ile Phe
            1060                1065                1070
Arg Lys Phe Asp Val Asn Thr Ser Ala Val Gln Val Leu Ile Glu His
        1075                1080                1085
Ile Gly Asn Leu Asp Arg Ala Tyr Glu Phe Ala Glu Arg Cys Asn Glu
    1090                1095                1100
Pro Ala Val Trp Ser Gln Leu Ala Lys Ala Gln Leu Gln Lys Gly Met
1105                1110                1115                1120
Val Lys Glu Ala Ile Asp Ser Tyr Ile Lys Ala Asp Asp Pro Ser Ser
                1125                1130                1135
Tyr Met Glu Val Val Gln Ala Ala Asn Thr Ser Gly Asn Trp Glu Glu
            1140                1145                1150
Leu Val Lys Tyr Leu Gln Met Ala Arg Lys Lys Ala Arg Glu Ser Tyr
        1155                1160                1165
Val Glu Thr Glu Leu Ile Phe Ala Leu Ala Lys Thr Asn Arg Leu Ala
    1170                1175                1180
Glu Leu Glu Glu Phe Ile Asn Gly Pro Asn Asn Ala His Ile Gln Gln
1185                1190                1195                1200
Val Gly Asp Arg Cys Tyr Asp Glu Lys Met Tyr Asp Ala Ala Lys Leu
                1205                1210                1215
Leu Tyr Asn Asn Val Ser Asn Phe Gly Arg Leu Ala Ser Thr Leu Val
            1220                1225                1230
His Leu Gly Glu Tyr Gln Ala Ala Val Asp Gly Ala Arg Lys Ala Asn
        1235                1240                1245
Ser Thr Arg Thr Trp Lys Glu Val Cys Phe Ala Cys Val Asp Gly Lys
    1250                1255                1260
Glu Phe Arg Leu Ala Gln Met Cys Gly Leu His Ile Val Val His Ala
1265                1270                1275                1280
Asp Glu Leu Glu Glu Leu Ile Asn Tyr Tyr Gln Asp Arg Gly Tyr Phe
                1285                1290                1295
Glu Glu Leu Ile Thr Met Leu Glu Ala Ala Leu Gly Leu Glu Arg Ala
            1300                1305                1310
His Met Gly Met Phe Thr Glu Leu Ala Ile Leu Tyr Ser Lys Phe Lys
        1315                1320                1325
Pro Gln Lys Met Arg Glu His Leu Glu Leu Phe Trp Ser Arg Val Asn
    1330                1335                1340
Ile Pro Lys Val Leu Arg Ala Ala Glu Gln Ala His Leu Trp Ala Glu
1345                1350                1355                1360
Leu Val Phe Leu Tyr Asp Lys Tyr Glu Glu Tyr Asp Asn Ala Ile Ile
                1365                1370                1375
Thr Met Met Asn His Pro Thr Asp Ala Trp Lys Glu Gly Gln Phe Lys
            1380                1385                1390
Asp Ile Ile Thr Lys Val Ala Asn Val Glu Leu Tyr Tyr Arg Ala Ile
```

```
        1395                1400                1405
Gln Phe Tyr Leu Glu Phe Lys Pro Leu Leu Leu Asn Asp Leu Leu Met
    1410                1415                1420
Val Leu Ser Pro Arg Leu Asp His Thr Arg Ala Val Asn Tyr Phe Ser
1425                1430                1435                1440
Lys Val Lys Gln Leu Pro Leu Val Lys Pro Tyr Leu Arg Ser Val Gln
                1445                1450                1455
Asn His Asn Asn Lys Ser Val Asn Glu Ser Leu Asn Asn Leu Phe Ile
            1460                1465                1470
Thr Glu Glu Asp Tyr Gln Ala Leu Arg Thr Ser Ile Asp Ala Tyr Asp
        1475                1480                1485
Asn Phe Asp Asn Ile Ser Leu Ala Gln Arg Leu Glu Lys His Glu Leu
    1490                1495                1500
Ile Glu Phe Arg Arg Ile Ala Ala Tyr Leu Phe Lys Gly Asn Asn Arg
1505                1510                1515                1520
Trp Lys Gln Ser Val Glu Leu Cys Lys Lys Asp Ser Leu Tyr Lys Asp
                1525                1530                1535
Ala Met Gln Tyr Ala Ser Glu Ser Lys Asp Thr Glu Leu Ala Glu Glu
            1540                1545                1550
Leu Leu Gln Trp Phe Leu Gln Glu Glu Lys Arg Glu Cys Phe Gly Ala
        1555                1560                1565
Cys Leu Phe Thr Cys Tyr Asp Leu Leu Arg Pro Asp Val Val Leu Glu
    1570                1575                1580
Thr Ala Trp Arg His Asn Ile Met Asp Phe Ala Met Pro Tyr Phe Ile
1585                1590                1595                1600
Gln Val Met Lys Glu Tyr Leu Thr Lys Val Asp Lys Leu Asp Ala Ser
                1605                1610                1615
Glu Ser Leu Arg Lys Glu Glu Glu Gln Ala Thr Glu Thr Gln Pro Ile
            1620                1625                1630
Val Tyr Gly Gln Pro Gln Leu Met Leu Thr Ala Gly Pro Ser Val Ala
        1635                1640                1645
Val Pro Pro Gln Ala Pro Phe Gly Tyr Gly Tyr Thr Ala Pro Pro Tyr
    1650                1655                1660
Gly Gln Pro Gln Pro Gly Phe Gly Tyr Ser Met
1665                1670                1675

<210> 7
<211> 903
<212> PRT
<213> Homo sapiens

<400> 7
Met Ala Ile Gln Phe Arg Ser Leu Phe Pro Leu Ala Leu Pro Gly Met
 1               5                  10                  15
Leu Ala Leu Leu Gly Trp Trp Trp Phe Phe Ser Arg Lys Lys Gly His
            20                  25                  30
Val Ser Ser His Asp Glu Gln Gln Val Glu Ala Gly Ala Val Gln Leu
        35                  40                  45
Arg Ala Asp Pro Ala Ile Lys Glu Pro Leu Pro Val Glu Asp Val Cys
    50                  55                  60
Pro Lys Val Val Ser Thr Pro Pro Ser Val Thr Glu Pro Pro Glu Lys
65                  70                  75                  80
Glu Leu Ser Thr Val Ser Lys Leu Pro Ala Glu Pro Pro Ala Leu Leu
                85                  90                  95
Gln Thr His Pro Pro Cys Arg Arg Ser Glu Ser Ser Gly Ile Leu Pro
            100                 105                 110
Asn Thr Thr Asp Met Arg Leu Arg Pro Gly Thr Arg Arg Asp Asp Ser
```

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        115                 120                 125
Thr Lys Leu Glu Leu Ala Leu Thr Gly Gly Glu Ala Lys Ser Ile Pro
    130                 135                 140
Leu Glu Cys Pro Leu Ser Ser Pro Lys Gly Val Leu Phe Ser Ser Lys
145                 150                 155                 160
Ser Ala Glu Val Cys Lys Gln Asp Ser Pro Phe Ser Arg Val Pro Arg
                165                 170                 175
Lys Val Gln Pro Gly Tyr Pro Val Val Pro Ala Glu Lys Arg Ser Ser
            180                 185                 190
Gly Glu Arg Ala Arg Glu Thr Gly Gly Ala Glu Gly Thr Gly Asp Ala
        195                 200                 205
Val Leu Gly Glu Lys Val Leu Glu Glu Ala Leu Leu Ser Arg Glu His
    210                 215                 220
Val Leu Glu Leu Glu Asn Ser Lys Gly Pro Ser Leu Ala Ser Leu Glu
225                 230                 235                 240
Gly Glu Glu Asp Lys Gly Lys Ser Ser Ser Ser Gln Val Val Gly Pro
                245                 250                 255
Val Gln Glu Glu Glu Tyr Val Ala Glu Lys Leu Pro Ser Arg Phe Ile
            260                 265                 270
Glu Ser Ala His Thr Glu Leu Ala Lys Asp Asp Ala Ala Pro Ala Pro
        275                 280                 285
Pro Val Ala Asp Ala Lys Ala Gln Asp Arg Gly Val Glu Gly Glu Leu
    290                 295                 300
Gly Asn Glu Glu Ser Leu Asp Arg Asn Glu Glu Gly Leu Asp Arg Asn
305                 310                 315                 320
Glu Glu Gly Leu Asp Arg Asn Glu Glu Ser Leu Asp Arg Asn Glu Glu
                325                 330                 335
Gly Leu Asp Arg Asn Glu Glu Ile Lys Arg Ala Ala Phe Gln Ile Ile
            340                 345                 350
Ser Gln Val Ile Ser Glu Ala Thr Glu Gln Val Leu Ala Thr Thr Val
        355                 360                 365
Gly Lys Val Ala Gly Arg Val Cys Gln Ala Ser Gln Leu Gln Gly Gln
    370                 375                 380
Lys Glu Glu Ser Cys Val Pro Val His Gln Lys Thr Val Leu Gly Pro
385                 390                 395                 400
Asp Thr Ala Glu Pro Ala Thr Ala Glu Ala Ala Val Ala Pro Pro Asp
                405                 410                 415
Ala Gly Leu Pro Leu Pro Gly Leu Pro Ala Glu Gly Ser Pro Pro Pro
            420                 425                 430
Lys Thr Tyr Val Ser Cys Leu Lys Ser Leu Leu Ser Ser Pro Thr Lys
        435                 440                 445
Asp Ser Lys Pro Asn Ile Ser Ala His His Ile Ser Leu Ala Ser Cys
    450                 455                 460
Leu Ala Leu Thr Thr Pro Ser Glu Glu Leu Pro Asp Arg Ala Gly Ile
465                 470                 475                 480
Leu Val Glu Asp Ala Thr Cys Val Thr Cys Met Ser Asp Ser Ser Gln
                485                 490                 495
Ser Val Pro Leu Val Ala Ser Pro Gly His Cys Ser Asp Ser Phe Ser
            500                 505                 510
Thr Ser Gly Leu Glu Asp Ser Cys Thr Glu Thr Ser Ser Ser Pro Arg
        515                 520                 525
Asp Lys Ala Ile Thr Pro Pro Leu Pro Glu Ser Thr Val Pro Phe Ser
    530                 535                 540
Asn Gly Val Leu Lys Gly Glu Leu Ser Asp Leu Gly Ala Glu Asp Gly
545                 550                 555                 560
Trp Thr Met Asp Ala Glu Ala Asp His Ser Gly Gly Ser Asp Arg Asn
                565                 570                 575
```

```
Ser Met Asp Ser Val Asp Ser Cys Cys Ser Leu Lys Lys Thr Glu Ser
            580                 585                 590
Phe Gln Asn Ala Gln Ala Gly Ser Asn Pro Lys Lys Val Asp Leu Ile
        595                 600                 605
Ile Trp Glu Ile Glu Val Pro Lys His Leu Val Gly Arg Leu Ile Gly
    610                 615                 620
Lys Gln Gly Arg Tyr Val Ser Phe Leu Lys Gln Thr Ser Gly Ala Lys
625                 630                 635                 640
Ile Tyr Ile Ser Thr Leu Pro Tyr Thr Gln Ser Val Gln Ile Cys His
                645                 650                 655
Ile Glu Gly Ser Gln His His Val Asp Lys Ala Leu Asn Leu Ile Gly
            660                 665                 670
Lys Lys Phe Lys Glu Leu Asn Leu Thr Asn Ile Tyr Ala Pro Pro Leu
        675                 680                 685
Pro Ser Leu Ala Leu Pro Ser Leu Pro Met Thr Ser Trp Leu Met Leu
    690                 695                 700
Pro Asp Gly Ile Thr Val Glu Val Ile Val Val Asn Gln Val Asn Ala
705                 710                 715                 720
Gly His Leu Phe Val Gln Gln His Thr His Pro Thr Phe His Ala Leu
                725                 730                 735
Arg Ser Leu Asp Gln Gln Met Tyr Leu Cys Tyr Ser Gln Pro Gly Ile
            740                 745                 750
Pro Thr Leu Pro Thr Pro Val Glu Ile Thr Val Ile Cys Ala Ala Pro
        755                 760                 765
Gly Ala Asp Gly Ala Trp Trp Arg Ala Gln Val Val Ala Ser Tyr Glu
    770                 775                 780
Glu Thr Asn Glu Val Glu Ile Arg Tyr Val Asp Tyr Gly Gly Tyr Lys
785                 790                 795                 800
Arg Val Lys Val Asp Val Leu Arg Gln Ile Arg Ser Asp Phe Val Thr
                805                 810                 815
Leu Pro Phe Gln Gly Ala Glu Val Leu Leu Asp Ser Val Met Pro Leu
            820                 825                 830
Ser Asp Asp Asp Gln Phe Ser Pro Glu Ala Asp Ala Ala Met Ser Glu
        835                 840                 845
Met Thr Gly Asn Thr Ala Leu Leu Ala Gln Val Thr Ser Tyr Ser Pro
    850                 855                 860
Thr Gly Leu Pro Leu Ile Gln Leu Trp Ser Val Val Gly Asp Glu Val
865                 870                 875                 880
Val Leu Ile Asn Arg Ser Leu Val Glu Arg Gly Leu Ala Gln Trp Val
                885                 890                 895
Asp Ser Tyr Tyr Thr Ser Leu
            900
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<210> 8
<211> 197
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Met Phe Pro Gln Ser Arg His Ser Gly Ser Ser His Leu Pro Gln
 1               5                  10                  15
Gln Leu Lys Phe Thr Thr Ser Asp Ser Cys Asp Arg Ile Thr Asp Glu
            20                  25                  30
Phe Gln Leu Leu Gln Ala Gln Tyr His Ser Leu Lys Leu Glu Cys Asp
        35                  40                  45
Lys Leu Ala Ser Glu Lys Ser Glu Met Gln Arg His Tyr Val Met Tyr
    50                  55                  60
```

Tyr Glu Met Ser Tyr Gly Leu Asn Ile Glu Met His Lys Gln Ala Glu
65 70 75 80
Ile Val Lys Arg Leu Asn Gly Ile Cys Ala Gln Val Leu Pro Tyr Leu
85 90 95
Ser Gln Glu His Gln Gln Gln Val Leu Gly Ala Ile Glu Arg Ala Lys
100 105 110
Gln Val Thr Ala Pro Glu Leu Asn Ser Ile Ile Arg Gln Gln Leu Gln
115 120 125
Ala His Gln Leu Ser Gln Leu Gln Ala Leu Ala Leu Pro Leu Thr Pro
130 135 140
Leu Pro Val Gly Leu Gln Pro Pro Ser Leu Pro Ala Val Ser Ala Gly
145 150 155 160
Thr Gly Leu Leu Ser Leu Ser Ala Leu Gly Ser Gln Ala His Leu Ser
165 170 175
Lys Glu Asp Lys Asn Gly His Asp Gly Asp Thr His Gln Glu Asp Asp
180 185 190
Gly Glu Lys Ser Asp
195

<210> 9
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 9
cgcggatccc catgcaggcg cgctactccg tgt 33

<210> 10
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 10
cgcggatcct cagtatttcg tgcagtcgta gga 33

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 11
taatacgact cactataggg 20

<210> 12
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 12
agggcgtgaa tgtaagcgt 19